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TRAL HERNIA, CURED BY A  
FLAP OPERATION

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**A REMARKABLE CASE OF VENTRAL HERNIA, CURED BY  
A FLAP OPERATION\***

By GEORGE H. NOBLE, M.D.

**H**ERE is a brief report with some rough schematic drawings of an enormous hernia between the ensiform cartilage and the umbilicus. The subject was a very large woman who came to me from a neighboring State, giving a meager history, saying that the protrusion first appeared after severe straining, and grew rapidly until it reached the size of an adult head. The treatment she had received consisted in local applications only, no attempt at operative measures having been made.

The case is one of considerable interest on account of such a large hernia in this region and because the expansion of the ribs prevented closure of the ring, by approximation of its margins, necessitating, therefore, a flap operation to close the aperture, which was large enough to pass my closed hand through without resistance. Indeed, a prominent surgeon ventured the assertion that if I ever cut that woman open, I would never get her sewed together again, so it was my desire to demonstrate that the operation was feasible, having studied or worked out the method most suitable to it.

To fully appreciate the intrinsic strength of the flaps, it is well to refer briefly to the distribution of the aponeurosis in this locality. The three flat abdominal muscles shade off into aponeurotic layers as

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they approach the lineæ semilunares; that of the external oblique passes anterior to the recti muscle to join its fellow of the opposite side; that of the transversalis passes posterior to the muscles to join

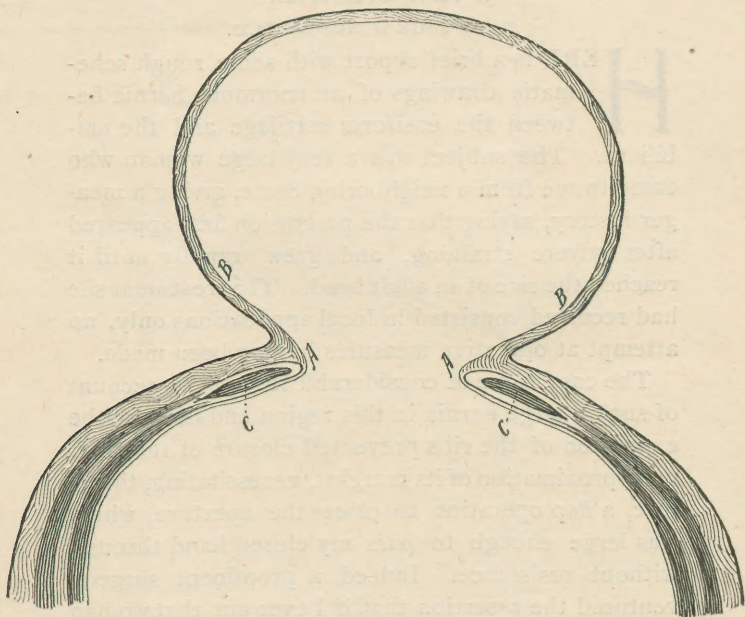


FIG. I

TRANSVERSE SECTION OF BODY SHOWING RELATIVE SIZE OF HERNIAL OPENING, AA, AND SAC; ALSO RELATION OF FASCIA AND APONEUROSIS TO THE RECTI MUSCLES, C. EXCESS OF SAC TRIMMED AWAY AT BB, AND PERITONEUM STRIPPED DOWN TO AA, AND UNITED IN THE MEDIAN LINE AS SHOWN IN FIG. II

its fellow; while that of the internal oblique divides at the external margin of the recti into two layers. The anterior passes in front of the muscles and unites with the aponeurosis of the external oblique.

The posterior passes behind the muscles uniting with the aponeurosis of the transversalis muscles. These two lamellæ again unite at the inner margin of the rectus and are finally lost in the linea alba.

The recti muscles apparently divide the aponeurotic or fibrous layers equally in an antero-posterior direction, but intrinsically the greatest strength lies in the innermost surface of the abdominal walls, or is inherent to the transversalis fascia.

The operation was a very simple one, consisting: First. In trimming away the excess of the sac,

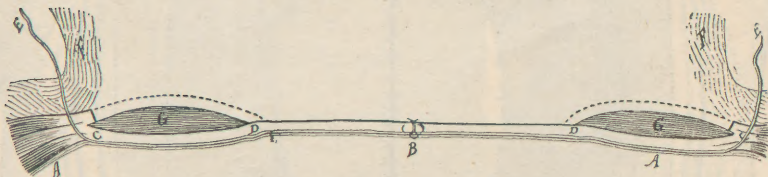


FIG. II

PERITONEUM, *AA*, UNITED BY BURIED CATGUT IN THE MEDIAN LINE, *B*. THE DOTTED LINES, *CD*, REPRESENT THE ANTERIOR SHEATH OF THE RECTI MUSCLES WHICH HAVE BEEN CUT AWAY AND TURNED OVER THE HERNIAL OPENING, *DD*, AND UNITED BY BURIED SILK SUTURES IN MEDIAN LINE, *B*. *EE* IS A TENSION SUTURE PASSED DOWN TO THE PERITONEUM, BUT NOT IMPLICATING IT. *FF*, SKIN AND FATTY TISSUE TURNED ASIDE. *GG*, RECTI MUSCLES

and uniting the peritoneum with buried catgut sutures.

Second. Four strong tension sutures were passed through the abdominal walls, piercing the semilunar lines down to the peritoneum but not implicating it.

Third. A semilunar flap was carefully outlined upon either side over the recti muscles with the straight or vertical sides upon their outer margins, and the convex borders turned toward and extending to the hernial ring. The aponeurosis of the

external oblique and the outer layer of that belonging to the internal oblique muscles were cut through and the flaps liberated, except where they joined the

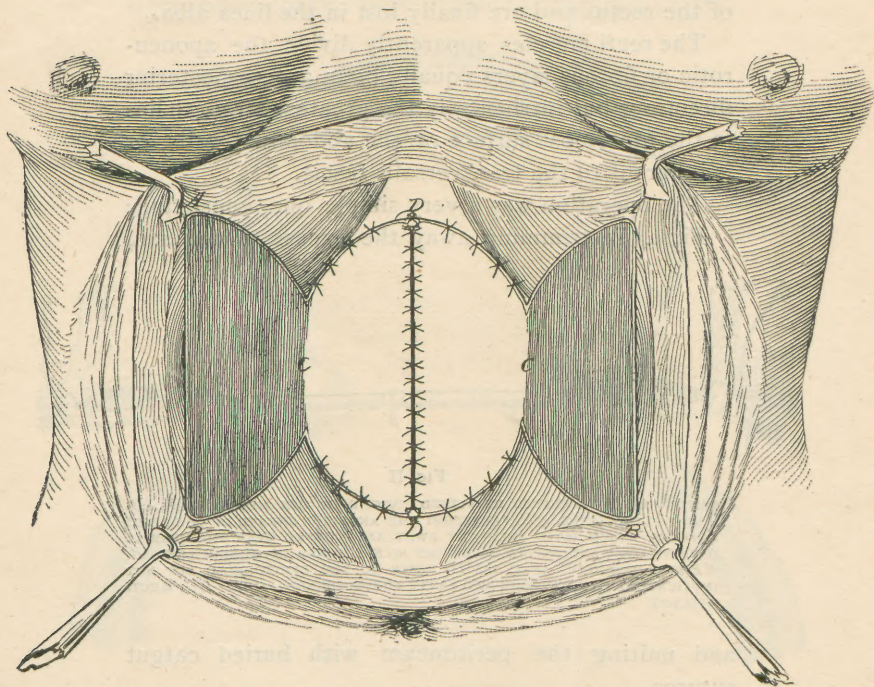


FIG. III

ANTERIOR VIEW SHOWING HERNIAL OPENING, *DCDC*, AND SEMICIRCULAR FLAPS, *A, B, C*, CUT FROM THE ANTERIOR SHEATH OF THE RECTI MUSCLES AND TURNED OVER THE OPENING AND UNITED IN THE MEDIAN LINE, *D*. (CROSS SECTION OF SAME, SEE FIG. II.) SIZE OF HERNIAL OPENING. FOUR AND A HALF INCHES VERTICALLY, *DD*, AND THREE AND A HALF INCHES TRANSVERSELY, *CC*

ring, and turned over the opening accurately abutting the edges, in which position they were stitched with buried silk sutures. The convex borders



coincided with the margins of the ring to which they were made fast.

Fourth. The recti muscles were brought in direct apposition by surrounding them with large catgut, thus adding another strong layer of dense tissue over the hernial opening.

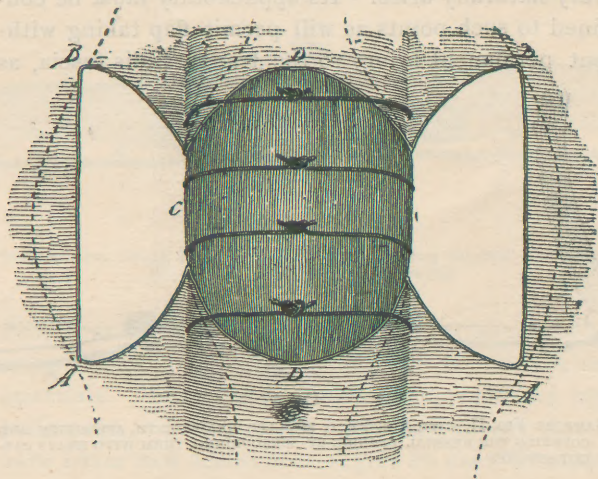


FIG. IV

SHOWING RECTI MUSCLES DRAWN FROM THEIR FALSE POSITION (SEE DOTTED LINES), INTO WHICH THEY WERE FORCED BY THE PROTRUSION, AND FIXED OVER THE HERNIAL OPENING, *DCDC*. (TRANSVERSE SECTION OF SAME, SEE FIG. V.) THE WHITE SPACES, *ABC*, REPRESENT THE POSTERIOR SHEATH OF THE RECTI MUSCLES, SHOWING THROUGH THE PLACES FROM WHICH THE SEMILUNAR FLAPS WERE TAKEN

Fifth. The skin and fatty tissue were then brought together and the tension sutures tied over all, the wound was dressed antiseptically, with firm pad, roller bandages, etc.

The wound proved entirely aseptic and the results most satisfactory, the woman now having been

well for about three years without any indications of a return of the hernia.

So far as I know, this is the only hernia in this region that has been closed by a flap operation; and being a new departure from the established customs, questions concerning its utility and efficacy may very naturally arise. Its applicability must be confined to such points as will permit flap taking without permanent injury to the transversalis fascia, as

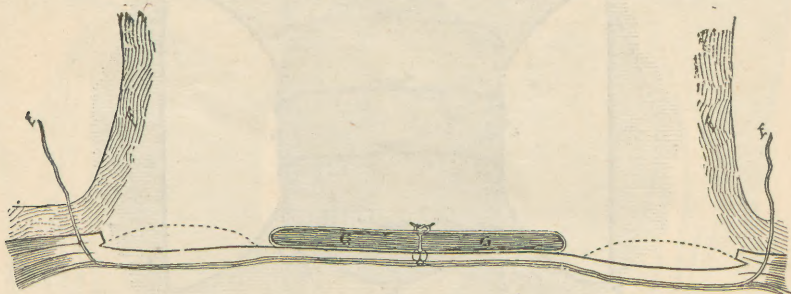


FIG. V

SAME AS FIG. II, WITH THE RECTI MUSCLES DRAWN INTO APPPOSITION AND COVERING THE HERNIAL OPENING BY SURROUNDING THEM WITH HEAVY CAT-GUT SUTURES

it must be relied upon to give strength to the abdomen.

As for efficacy, the simple fact that the strong flap of fibrous tissue and recti muscles relieved of their sheaths and firmly united to each other have proven sufficient to effectually close a hernial opening equivalent to about twelve square inches in extent should be sufficient to establish it, so far as the hernia *per se* is concerned.

With reference to the parts from which the flaps were taken, no fears need be entertained regarding



the liability of hernia there, as they are protected by the transversalis fascia, for, in the lower fourth of the abdomen, union of this fascia is relied upon to prevent post-operative hernia. The denuded areas, therefore, have as great strength as that portion of the abdomen just mentioned.

If it should fall to my lot to do a like opera-

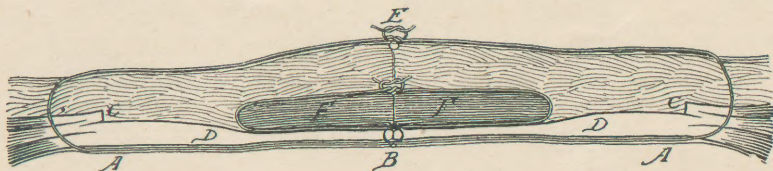


FIG. VI

SAME AS FIGS. IV AND V, WITH SKIN AND FATTY TISSUE BROUGHT TOGETHER AND TENSION SUTURES TIED OVER ALL

tion, I would make but one modification—that of using buried silver sutures instead of absorbable materials. Silver has for nine or ten years had my preference as a suture, and I am glad to say that I have never had occasion to regret its use. Besides its value as a permanent suture, the exudate that is thrown around the wire organizes into dense tissue that very materially increases the strength of the parts.

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